Ciudad Juárez, Chih. May 30, 1997

JOINT REPORT OF THE PRINCIPAL ENGINEERS
RECOMMENDING THE DISTRIBUTION OF COSTS BETWEEN THE TWO
COUNTRIES FOR THE OPERATION AND MAINTENANCE OF THE NUEVO
LAREDO INTERNATIONAL PROJECT AUTHORIZED IN IBWC MINUTE NO 279.

To the Honorable Commissioners
International Boundary and Water Commission
United States and Mexico
El Paso, Texas and Ciudad Juárez, Chihuahua

Sirs:

In accordance with your instructions, we respectfully submit for your consideration this Joint Report recommending distribution between the two countries of the operation and maintenance costs of the principal elements of the jointly financed international sanitation project for the city of Nuevo Laredo, Tam., authorized in Commission Minute No. 279, entitled, "Joint Measures to Improve the Quality of the Waters of the Rio Grande at Laredo, Texas / Nuevo Laredo, Tamaulipas," dated August 28, 1989.

BACKGROUND

We considered Resolution No. 4 of Minute No. 279 which establishes that the Governments of the United States and Mexico will participate in the financing of the construction, operation and maintenance of the six principal elements that make up the international sanitation project. We took into account Resolution No. 8 which stipulates that the Commission reach an agreement on the division of these costs for the costs of operation and maintenance of the principal elements of the jointly financed sanitation project.

We also took into consideration that the Commission adopted the terms in the Joint Report of the Principal Engineers that forms a part of Minute No. 279. That report establishes that for Mexico the standards for wastewaters discharged to the Rio Grande from Nuevo Laredo are different than those in the United States, such that the standards stipulated in Minute No. 279 would be applied to the Nuevo Laredo treatment plant discharges, provided that the control measures necessary to meet such standards are jointly financed by the governments of the United States and Mexico. Also, we considered that the referenced Joint Report establishes that the cost to the United States should correspond to the difference between the cost to Mexico of operation and maintenance for Mexico to meet its national effluent standards established for Nuevo Laredo, Tam. and the costs of operation and maintenance necessary to meet the standards agreed to for the international plant in the referenced Minute.

Finally, we considered the information provided by the Mexican Section's Principal Engineer that the policy of the Government of Mexico is one in which municipalities will exercise greater responsibilities in financing and carrying out the operation and maintenance of drinking water and wastewater systems. As such, the Government of Mexico seeks to improve the capacity of local sanitation systems operating organizations such that they will be self-sufficient in their operation and maintenance of such systems. Further, we considered that the discharge standards of the two countries applicable to the Rio Grande in the area of Laredo - Nuevo Laredo may in the future tend to be similar. Thus, we consider it advisable to strengthen the Nuevo Laredo, Tam., operating organization so that this organization may cover the costs that this effort implies. With this in mind, a practical approach for a distribution of costs between the United States and Mexico, would be that of distributing the cost participation of the United States in a greater proportionate amount in the first few years and a lesser amount in the second part of a 10 year period. Further, at the end of that period, we recommend that the Commission review the cost distribution and make recommendations regarding the difference between the discharges standards applicable in Mexico for the Rio Grande in Nuevo Laredo and the standards established in Minute No. 279. Further the Commission would review the cost distribution against the capacity of the Operating Organization to completely cover the cost of operating the plant.

DISTRIBUTION OF COSTS

We also observed that the six principal elements of the international sanitation project, consisting of a) Riverside Collector, b) Coyotes I Collector, c) Sewage Collection Expansion, d) Sewage Collection Rehabilitation, e) Pumping Plant and f) Sewage Treatment Plant, were essentially completed in July 1996. We also observed that costs for certain pre-operations and maintenance activities were covered since 1995. We reviewed the summary of costs, in the enclosed Table I, corresponding to the actual costs to the Operating Organization from July through December 1996 for the treatment and pumping plants and observed that the total was equivalent to \$687,694 United States currency.

We also observed that for the operation and maintenance of Sewage Collection Expansion and Sewage Collection Rehabilitation principal elements, such maintenance would be performed under Mexico's standards such that Mexico would cover the total cost. However, we observed that there was a 25 per cent increase in the construction costs of the Ribereno and Coyotes Collectors consistent with control measures necessary to meet the discharge standards in Minute No.279. Correspondingly, the United States could cover 25 per cent of the operation and maintenance costs of such collectors. Also, we observed that certain additional features were added to the pumping station element which also increased the construction costs of the pumping station and the treatment plant elements in order to include control measures necessary to meet the discharge standards in Minute No. 279. Thus the United States could cover an estimated 25 per cent of the costs of the pumping station. However, the United States cost contribution to the total operation and maintenance of all six principal elements should not exceed 33.3 percent. Based on that experience we estimated that the cost for the six elements for 1997 would be in the range of \$1.12 to \$1.99 million, United States currency.

We reviewed the principles and costs referenced above using the basic items shown in the enclosed Table I and, based on these, made a projection of a range of the estimated total costs from 1998 through 2005, taking into account increased sewage generation up to the plant capacity, assuming simple annual increase of 10 per cent through 2005 over the estimated costs for 1997 in the range of \$1.12 to \$1.99 million and arrived at an estimated total cost range of from \$15 million to \$27.49 million for a 10 year period through 2005. Accordingly, the United States share of the estimated total cost using the lower estimate of the range is estimated at \$5 million through 2005.

Further, we took into account the Mexican Government's objective to strengthen operating organizations and concluded that the operating organization would need support in the earlier years of the operation and maintenance while it undergoes capacity building. Accordingly we propose a distribution of the United States contribution, based on actual costs, of \$350,000 for 1996 and \$700,000 for 1997 and based on an estimated total cost range of from \$15 million to \$27.49 million for a 10 year period through 2005, as well as the information of the United States Principal Engineer that his country is not prepared to provide more than 33.3 per cent of the total actual costs of the six principal elements in that period. Such United States participation would be subject to review at the end of each year against that actual cost incurred, including those that may be incurred for contingencies, and the information provided to the IBWC by the Mexican Section regarding the progress made in achieving the Mexican Government's objective to strengthen the operating organization in Nuevo Laredo, Tam. Based on this review, beginning in 1998, the estimated United States participation will be determined in January of this and subsequent years.

IMPLEMENTATION PROCEDURES

We consider that the following procedures be used in implementing the above proposed cost distribution:

- 1. That the United States cover its assigned participation in the estimated costs of operating and maintaining the six principal elements of the Nuevo Laredo International Sanitation Project in the amounts of \$350,000 in 1996 and \$700,000 in 1997.
- 2. That for the period from 1998 through 2005, the United States cover its assigned participation in the estimated costs of operating and maintaining the six principal elements of the Nuevo Laredo International Sanitation Plant subject to review, for appropriate adjustments, at the end of each year against the actual costs incurred, and the information provided to the IBWC by the Mexican Section regarding the progress made in achieving the Mexican Government's objective to strengthen the operating organization in Nuevo Laredo, Tam. with the understandings in Points 3-6 below.
- 3. That Mexico, through the Nuevo Laredo operating agency, cover the difference between the actual costs of the international sanitation project through 2005 plant and the corresponding United States contribution, providing to the United States.

statements of actual costs for the basic items listed on Table I indicating those costs to be covered with the United States funds and those paid by Mexico over and above the United States contribution, making the supporting documentation available to the IBWC.

- 4. That upon the approval of this Joint Report, the United States Section of the Commission provide to the Mexican Section of the Commission, the initial contribution of \$350,000 corresponding to 1996.
- 5. That subsequently, the operating organization present to the Mexican Section the necessary statement(s) of the international project's operation and maintenance costs as they are incurred each month, for presentation to the IBWC during the first 10 days of the following month in accordance with Point 3, above.
- 6. That the United States Section make payment through the Mexican Section for the actual operation and maintenance costs presented in Point 5) above, within the next days after these are presented through the Mexican Section, in an amount that will not exceed a prorated monthly payment of the annual corresponding United States contribution in effect for that year, using the "buy" pesos for dollars rate of exchange in effect at the closing of the last working day of the month in which the costs were incurred.

RECOMMENDATIONS

We recommend that the IBWC, adopt the above described distribution of costs and procedures for implementation as the agreement on the distribution between the two countries of the operation and maintenance costs of the principal elements of the jointly financed international sanitation project for the city of Nuevo Laredo, Tam., required by Resolution No. 8 of IBWC Minute No. 279, entitled, "Joint Measures to Improve the Quality of the Waters of the Rio Grande at Laredo, Texas / Nuevo Laredo, Tamaulipas," dated August 28, 1989.

Respectfully,

Carlos Marin
U.S. Section Principal Engineer

Luis Antonio Rascón

Mexican Section Principal Engineer

TABLE I OPERATION AND MAINTENCE COSTS NUEVO LAREDO, TAM. WASTEWATER TREATMENT PLANT SUMMARY OF 1996 OPERATION COSTS (U.S. DOLLARS)

		(U.S. D.	(U.S. DOLLARS)				
TEM	JUL	AUG	SEP	Do	NOV	DEC	TOTAL
COMAPA OPERATION							
PERSONNEL	8,207	166,8	8,207	17,263	34,605	22,027	98,640
ELECTRIC ENERGY			10,928	52,136	50,055	53,287	166,406
REAGENTS				2,477	2,698	3,000	8,174
EQUIPMENT				2,956	11,449		14,405
LABORATORY				925	4,507		5,432
FACILITIES & BUILDING MAINTENANCE				110	3,474	4,539	8,123
VEHICLES				1,035		i:	1,035
FUEL & LUBRICANTS	138	123	129	379	361	447	1,577
TELEPHONE	145	144	108	82	116	115	607
COMMUNICATIONS EQUIPMENT				2,706			2,706
OFFICE EXPENSES				410	182	99	648
MISC. MAINTENANCE				93	141	16	324
SILT REMOVAL			551	1,102	1,102	1,102	3,859
SEWERS & COLLECTORS							
SLUDGE DISPOSAL				131	127	695	827
SUBTOTAL	8,489	8,597	PZ5'61	81,803	108.818	85,234	312,865
ATLATEC OPERATIONS	133,733	134,354	106,741	ļ.			374,829
TOTAL	142.223	142.951	126.665	81.803	108.818	Pt.C 18	687.604
Exchange rate of \$8 Pesos per Dollar						1	1

November 9, 1995 El Paso, Texas

JOINT REPORT OF THE PRINCIPAL ENGINEERS
CONCERNING RECOMMENDATIONS FOR THE OPERATION AND
MAINTENANCE OF THE INTERNATIONAL PROJECT TO IMPROVE THE
QUALITY OF THE WATERS OF THE RIO GRANDE AT
LAREDO, TEXAS-NUEVO LAREDO, TAMAULIPAS
ESTABLISHED IN MINUTE NO. 279

To The Honorable Commissioners
International Boundary and Water Commission
United States and Mexico
El Paso, Texas and Ciudad Juarez, Chihuahua

Sirs:

In accordance with your instructions, we respectfully submit for your consideration, this joint report which proposes the specific activities for the operation and maintenance of the international sanitation project authorized in Commission Minute No. 279, entitled "Joint Measures to improve the Quality of the Waters of the Rio Grande at Laredo, Texas/Nuevo Laredo Tamaulipas", signed and approved August 28, 1989.

In this respect, we considered the requirement in Resolution No. 8 of Minute No. 279 that the Commission reach an agreement on the division of the operation and maintenance costs of the principal elements of the Nuevo Laredo Sanitation Project before operation of the project begins. We also note the requirement in Resolution No. 9 of Minute No. 279 that the operation and maintenance of the project be under the direct control of the Mexican Section of the Commission, and that the operation and maintenance be performed in accordance with an operations and maintenance manual and specific program recommended by the Commission and approved by the two Governments. Finally, we considered Resolution No. 20 for industrial wastewater pre-treatment to preserve the efficiency of the treatment plant contemplated in the sanitation project.

DESCRIPTION OF THE WORKS UNDERTAKEN IN NUEVO LAREDO, TAMAULIPAS

We observe that the design and construction of the six principal elements of the international sanitation project in Nuevo Laredo, Tamaulipas authorized in Minute No. 279 are nearing completion. These principal elements are: a) Riverside Collector; b) Coyotes I Collector; c) Sewage Collection System Expansion; d) Sewage Collection System Rehabilitation; e) Pumping Plant and f) Treatment Plant. These were installed and constructed based on the criteria established in Minute No. 279. We reviewed the construction criteria and observed that the construction should be such that in the operation and maintenance there should not be any discharges of untreated sewage into the Rio Grande from the Nuevo Laredo, Tamaulipas sewage collection system, and that the discharge

into the Rio Grande from the Nuevo Laredo, Tamaulipas treatment should not exceed the discharge limits established in Minute No. 279.

We observe that the works undertaken under Minute No. 279 were as follows:

Riverside and Coyotes I Collectors

The Riverside and Coyotes I Collectors were constructed to ensure the proper collection and conveyance of Nuevo Laredo, Tamaulipas sewage to the international treatment works.

The Riverside Collector, located parallel to the Rio Grande, is 11 miles (18.3 kilometers (km) long and varies in pipe diameter from 18 inches (45 centimeters (cm) at the upper end to 72 inches (183 cm) at the lower end. The pipe diameters were up sized to assure that the collector has additional capacity to accommodate the city's future expansion. The collector will intercept and convey the sewage to a junction box located at the pumping station site.

The Coyote I Collector was constructed parallel to the Arroyo del Coyote to intercept and convey sewage from the collection system in the southern part of Nuevo Laredo, Tamaulipas to the junction box. It extends for 5 miles (8.7 km) long and varies in pipe diameter from 12 inches (30 cm) at the upper end to 48 inches (122 cm) at the junction box.

Expansion of Sewage Collection System

Several areas of Nuevo Laredo, Tamaulipas did not have any collection system, which resulted in discharges of residential sewage to nearby arroyos via open street flow, which eventually flowed to the Rio Grande. A total of 31 miles (49.8 km) of pipeline ranging in size from 6 inches (15 cm) to 24 inches (60 cm) was installed. Interconnection of residential lines to the Riverside and Coyote I Collector system was included in the project.

Rehabilitation of Sewage Collection System

Portions of the Nuevo Laredo, Tamaulipas sewage collection system are about 50 years old and have deteriorated to the point of collapsing. Rehabilitation of the sewage collection system was undertaken. Minute No. 279 envisioned rehabilitation of 23 specific sites, but for the most part the entire system required repairs or replacement. A total of 4 miles (6.7 km) of pipe was installed, varying in pipe diameters from 15 inches (38 cm) to 36 inches (91 cm).

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Pumping Station

The pumping station consists of two separate wet wells, each having an inside diameter of 33 feet (10 meters) and 49 feet (15 meters) in depth. Each wet well will be equipped with three (3) 14 million gallons per day (mgd) or 600 liters per second (1ps) submersible pumps and 281 hp motors. Each wet well has the capacity to pump to the treatment plant design capacity of 31 mgd (1360 lps). The two wet wells will be fed by the Riverside and Coyote I Collectors via a junction box.

Treatment Plant

The Nuevo Laredo International Wastewater Treatment Plant (NLIWTP) is an oxidation ditch vertical turbine aerator (carrousel) type facility designed to provide secondary treatment to 31 mgd (1360 LPs) at Nuevo Laredo, Tamaulipas. Location of the discharge point at the confluence of the Arroyo del Coyote and the Rio Grande is at 27.0 25' 01" north latitude and 99.0 29' 23" east longitude. Influent is from a pumping station constructed along the left bank of the Arroyo del Coyote which takes the flows arriving at a junction box from the Riverside and Coyote I Collectors. The Arroyo del Coyote is crossed by two 42-inch (106 cm) steel reinforced concrete cylinder force mains. The NLIWTP consists of a headworks structure containing two mechanical and a manual bar screens and two grit removal basins, six oxidation ditches with mechanical surface aerators, four clarifiers, chlorine disinfection facilities, effluent flow metering devices and a cascade aeration outfall to the Arroyo del Coyote. Sludge facilities include a return sludge pump station, aerated sludge holding tanks, waste sludge pumps, and 80 sludge drying beds. Other NLIWTP facilities include a potable and non-potable water system, an administration, maintenance and electrical building, standby generating facilities, a guard house, perimeter fencing and landscaping.

DESCRIPTION OF THE WORKS UNDERTAKEN IN LAREDO, TEXAS

We observe that the City of Laredo, Texas collects all of the existing sewage load and provides secondary treatment before discharge to the Rio Grande. Treatment is provided by two plants with a capacity totaling 11 mgd (486 lps) which discharge to the Rio Grande. The first plant, Zacate Creek Wastewater Treatment Plant, is an 8 mgd (350 lps) activated sludge/trickling filter facility located at the confluence of Zacate Creek and the Rio Grande about 0.5 mile (0.8 km) downstream of the Juarez/Lincoln International Bridge. The second plant, Laredo Southside Wastewater Treatment Plant, is a 3 mgd (131 lps) oxidation ditch facility located about 3 miles (5 km) south of the City of Laredo, Texas on the left bank of the Rio Grande. The effluents from these treatment plants are disinfected prior to discharge to the Rio Grande. The City of Laredo, Texas carries out a continuous operation and maintenance program to ensure compliance with United States effluent standards and surface water quality standards of the river. The City plans to increase its treatment capacity, as needed to keep ahead of the growing sewage load.

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CRITERIA FOR OPERATION AND MAINTENANCE OF THE LAREDO, TEXAS AND NUEVO LAREDO, TAMAULIPAS SYSTEMS

The City of Laredo, Texas operates and maintains its system in accordance with an operating plan and operations and maintenance manuals that comply with applicable laws in the United States, which as a minimum comply with criteria listed below. This information is available to the Commission. The Operating Agency for the Nuevo Laredo, Tamaulipas system will adopt an operating plan and operations and maintenance manual, also made available to the Commission, utlizing, applicable criteria in Mexico analyzed along with those for equipment installed at the plant that also, as a minimum, meet the critiera listed below:

Principal Collectors

The operations and maintenance of these elements should be as follows:

- a. A general annual or more frequent cleaning program as needed which includes the segments immediately upstream of the points where they intersect with collectors and subcollectors, ensuring that the transportation and final disposal of the solids removed during the cleaning in a manner that will prevent these materials from being carried in storm drains or natural drains that discharge to the Rio Grande.
- b. Operate and maintain the cleaning equipment in accordance with manuals.
- c. Immediate notification to the respective Section of the Commission of any potential and actual bypasses that result in the direct or indirect discharge from these collectors to the Rio Grande.
- d. Undertake repairs to damaged lines, remove obstructions and obstructing materials, taking measures that will prevent direct or indirect untreated sewage discharges to the Rio Grande.
- e. Inspections for the detection of pollutants, explosive, corrosive, clandestine discharges and obstructions.
- f. Consider a contingency plan of repairs with possible international support through the Commission for cases in which equipment and other resources are not immediately available to the operating agency.

Other Collection Network

We observed the need for the operation and maintenance of the collection network in the respective country based on a program that includes the following:

- a. Carry out the operation and maintenance of the network following the criteria that avoids spills from manholes that may directly or indirectly arrive at the Rio Grande.
- b. Develop a sludge and sand removal program that avoids spills from manholes that may directly or indirectly discharge to the Rio Grande, giving special attention to the areas which are brought to their attention by the respective Section of the Commission.
- c. Assure the separation of the storm drains from the sewer network.
- d. Carry out repairs to damaged lines and remove obstructions and obstructing materials.
- e. Effect periodic inspections to detect pollutants (explosives, corrosives, clandestine discharges, and obstructions.
- f. Consider in its contingency repairs plan, the possibility of international support through Commission.

Pumping and Treatment System

We observed the appropriateness of operating and maintaining these elements through the operating agency directly or through contract or other means considered adequate to ensure discharges from the treatment facilities comply with the standards established in Minute No. 279, and in accordance with an operation and maintenance manual adopted for this purpose considering the general criteria below:

- a. <u>Treatment</u> -- Carry out the operation and maintenance to assure compliance with the discharge standards established in Minute No. 279.
- b. <u>Personnel</u>— Have the minimum required staff in each area with the experience necessary for the operation and maintenance of the treatment systems.

- c. <u>Operation</u>- Carry out the operation in accordance with instructions, specifications and criteria established in the operations and maintenance manual.
- d. <u>Facilities</u> -- Carry out periodic inspections and a preventive maintenance program for these components with special attention to the pumping systems, primary electricity facilities for the treatment systems and electro-mechanic components, including a schedule for preventative maintenance and availability on site of spare parts for such maintenance.
- e. <u>Sludge</u> -- Dispose of the sludge at sites outside the Rio Grande floodplain or its tributaries in accordance with standards in force in the respective country.

COMMISSION SUPERVISION

We consider it appropriate that each Section of the Commission ensure that the operating organizations responsible for the operation and maintenance of the treatment systems in Laredo, Texas and Nuevo Laredo, Tamaulipas have available to the respective Section of the Commission quarterly reports on maintenance work effected including, the costs of operation and maintenance that requires use of international funds.

Also, we suggest that Commision personnel through their personnel at the Laredo, Texas and Nuevo Laredo, Tamaulipas offices carry out the following activities:

- 1. Systematic inspections based on mutual accord and coordinated through the respective Section of the Commission.
- 2. Notify the Principal Engineers on sewage spills that may discharge to the Rio Grande and necessary corrective measures.
- 3. A quarterly report on work carried out with observations and where appropriate, recommendations on matters affecting payments with international funds.
- Monthly reports of activities involving treatment, operation and maintenance, including monitoring of the water quality identifying problems observed and making recommendations to prevent them or resolve them.

Industrial Wastes Controls

A. Preservation of Treatment

We observe that Resolution No. 20 of Minute No. 279 requires that all industries that discharge wastewater to the sewage collection system provide adequate pre-treatment to ensure the efficiency of the treatment system. For this purpose, the operating organization will develop a program for control of discharges by industries in Laredo, Texas and Nuevo Laredo, Tamaulipas based on the standards in its respective country.

B. Characterization of Influent and Effluent

We consider that semi-annual monitoring is sufficient to characterize the effluent and influent at the treatment works and to detect any dissolved and total constituents that exceed pollution concentration limits that inhibit biological treatment processes which will cause or contribute to a less effective treatment. The Commission will support the operating agency by strengthening its analytical capacity for those parameters that require more frequency.

We thus recommend, that in addition to the systematic monitoring of conventional pollutants and Biological Oxygen Demand (BOD), Nitrogen, Nitrogen with Ammonia, Total Suspended Solids (TSS) and pH, the influent be monitored semi-annually for non-conventional contaminants that may inhibit the biological treatment processes that cause or contribute to a less effective treatment. These contaminants include arsenic, chromium (total), copper cyanide, lead, nickel and zinc.

C. Additional Monitoring in Case of Eccedence

We recommend that if an analysis of the influent concentrations or effluent loadings indicate an exceedence of standards, monitoring should be increased to once a month until such time as analyses demonstrate three months of acceptable levels, at which time, frequency should revert to semi-annual.

We recommend that in cases where the standard is exceeded the operating agency of the treatment system, immediately begin an investigation of the source and in accordance with the special discharge conditions and define the corresponding corrective actions.

DISTRIBUTION OF COSTS

We observe the requirement in Resolution No. 8 of Minute No. 279 that the Commission reach an agreement on the division of the operation and maintenance costs of the principal elements of the Nuevo Laredo, Tamaulipas sanitation project before operation of the project begins. Further, we note that the Joint Report of the Principal Engineers that forms a part of Minute No. 279, recognized that the cost to the United States should correspond to the difference between the

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operation and maintenance cost to Mexico to meet its national effluent standards established for Nuevo Laredo, Tamaulipas and the cost of operation and maintenance necessary to meet the effluent standards adopted in Minute No. 279 for the NLIWTP.

We consider it appropriate that the Principal Engineers, together with the operating organization, develop a specific program for distribution of operation and maintenance costs of the sewage system following the above principles with the goal of establishing, before the international project is in operation, a specific program of needs and distribution of costs for the first year and a general program for the next five years.

RECOMMENDATIONS

Based on the above consideration, we respectfully recommend:

- 1. The Commission adopt the criteria described above, for operation and maintenance of the six principal elements of the Nuevo Laredo, Tamaulipas International Sanitation Project authorized in Commission Minute No. 279, "Joint Measures to Improve the Quality of the Waters of the Rio Grande at Laredo, Texas/Nuevo Laredo, Tamaulipas", dated August 28, 1989 to comply with Resolution No. 8 of Minute No. 279.
- 2. The Commission adopt the bases described in distribution of costs section of this report whereby the Principal Engineers develop the specific distribution of costs and procedures for administration of United States and Mexican funds.

Respectfully,

(signed)
Jose S. Valdez
Principal Engineer
United States Section

(signed)

Luis Antonio Rascon Mendoza
Principal Engineer
Mexican Section